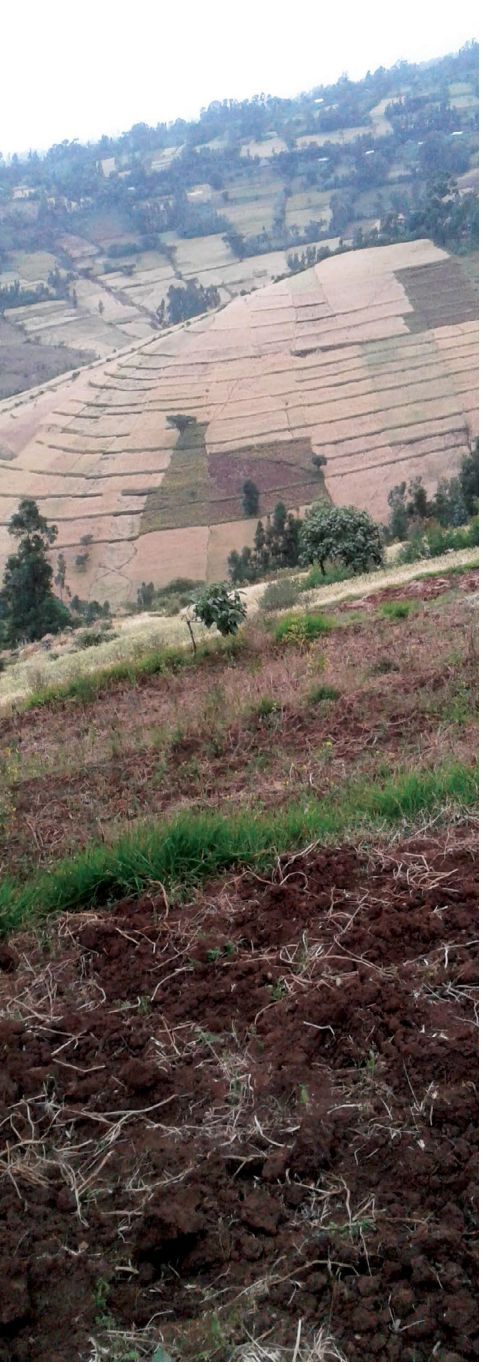

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MINISTRY OF AGRICULTURE

TOWARD AN INCLUSIVE AND EVIDENCE-BASED APPROACH TO FARMLAND CONSOLIDATION IN ETHIOPIA

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October 2020

Yihenew Zewdie and Lulseged Tamene

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Acknowledgements

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Contents

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1. Introduction

1.1 General background

Agriculture is the mainstay of African economies, including those with substantial mineral and oil resources. Africa's agricultural potential is widely believed to enable the continent to feed its own population as well as to contribute meaningfully to the growing global demand for food crops. However, the sector is routinely disparaged for not living up to its potential, thereby condemning agricultural producers to be stuck in the classical "low-level equilibrium trap" of low farm income, limited farm investment, and weak agricultural growth. "Although many factors contribute to Africa's persistent hunger and poverty, poor agricultural performance lies at the heart of the problem.... Africa's agricultural performance over the past 45 years has ranked worst in the world according to most conventional measures" (Haggblade et al., 2010: 3). While agreeing with such an assessment, some analysts put faith in the capacity of agriculture in Africa to lift millions out of poverty provided that it is given the right policy and programmatic attention.

For well over a decade now, and in particular since the formulation of the African Union's *Comprehensive Africa Agriculture Development Programme* (CAADP) in 2003, African leaders have recognized the significance of prioritized investment in agriculture for inclusive and sustainable economic growth. The four thematic pillars of CAADP, as well as the agricultural investment frameworks of the Regional Economic Communities (RECs) developed à la CAADP, have emphasized the importance of investing in agricultural land and water management and addressing the key challenges that impede the operation of input and output markets. The *Science Agenda for Agriculture in Africa* (S3A), which was formulated in 2014 under the stewardship of the Forum for Agricultural Research in Africa (FARA), went a step further and recognized the importance of investing in what it called the five i's: "... strengthening of *institutions*; availability and affordability of improved *inputs*; expansion of rural *infrastructure*; *incentives* for producers; and adequate and timely supply of *information*

to support production and marketing decisions" (FARA, 2014: 33, emphasis in the original). In the same vein, major continent-wide agricultural support programs, including the initiatives being funded by the widely recognized Alliance for a Green Revolution in Africa (AGRA), have a decidedly inputs and markets orientation.

Of late, however, analysts have pointed to the need to address the structural weaknesses inherent in small-scale agricultural production systems: despite substantial efforts toward agricultural intensification, lack of access to land and the small and fragmented holdings of the myriad farmers across the continent have acted as impediments to raising agricultural productivity perceptibly and enhancing farmers' competitiveness and income. According to a recent highly regarded report by the African Centre for Economic Transformation, ACET (2017), tackling the challenges of scale of operation was considered as central for boosting agricultural productivity, for transitioning from subsistence orientation to commercialization, for enhancing value addition and moving toward agro-industry, as well as for leveraging agriculture for employment, including employment in off-farm agricultural value chains.

The difficulty of realizing rapid and sustained agricultural growth from investments in small farm holdings has prompted both low- and middle-income countries to opt for corporate-type farming. Recently, China has been progressively inching toward private investment in large-scale farming, owing in part to poor yields from the country's hundreds of millions of small plots (Hornby, 2016). As will be shown later in this text, several African countries are adopting collaborative farming models of diverse nomenclature to boost agricultural productivity, create wealth, raise agricultural income, enhance competitiveness, and break into global agricultural value chains. Thus, the stage is being set to restructure the rural space economy in ways that add value to the theme-specific interventions that the different strategic frameworks have been promoting.

1.2 The country context

Ethiopia aspires to achieve middle-income status and intends to be a principal manufacturing hub in Africa by 2025. To achieve these ambitious goals, various policies and implementation processes have been designed under its successive medium-term development plans known officially as the *Growth and Transformation Plans* (GTP). Ethiopia recognizes that transformation of its agricultural sector is a sine qua non for industrialization. In order for agriculture to sustainably support the country's industrialization, agricultural productivity should be significantly improved and the sector has to be made to benefit from modern organizational and farm management solutions.

Sustainable intensification and niche-based diversification have to be coupled with integrated landscape management to enhance overall system productivity and livelihoods. Ethiopia's policymakers are aware that agricultural transformation also entails use of the country's irrigation potential so as to ensure a constant and predictable supply of consumer goods and industrial inputs for the growing urban population and for the mushrooming manufacturing base. Central to a productive agricultural sector is the extensive use of a range of mechanical technologies that not only decrease drudgery but also boost labor productivity and help attract youth and skilled professionals into the sector. Not unexpectedly, developing and promoting mechanization and irrigation are among the key pillars of Ethiopia's current (i.e., 2016 to 2020) GTP.

Smallholder crop agriculture in Ethiopia accounts for 85% of the country's total agricultural output (Tafesse et al., 2012) and 60% of farming households operate on less than 1 hectare of land (CSA, 2015). Starting especially from the second half of the past decade, agricultural productivity has shown remarkable growth owing largely to the adoption of improved agricultural technologies. Yet, crop yields are still low compared with what is possible even under conditions of smallholder agriculture (Fantu et al., 2015). Population pressure, declining land size per unit of agricultural labor, severe land degradation, nutrient depletion, and climate change, mainly in the form of rainfall variability, are some of the major underlying causes affecting agricultural transformation in the country. Moreover, because of the extremely small size of plots per capita, which an Ethiopian observer dubbed *starvation plots* (Dessalegn, 1994), and the rudimentary methods of cultivation farmers use on those plots, smallholder agriculture in Ethiopia has not been able to meet the subsistence needs of the

large families that depend on the land even in good rainfall years, let alone support industrial growth (EEA, 2002). Indications are that many of those farms are further split into several spatially separated land parcels, thereby exhibiting the prevalence of land fragmentation in rural Ethiopia.

Analysts distinguish between four types of land fragmentation: *fragmentation of land ownership, land use, within a farm (internal fragmentation), and separation of ownership and use* (Demetriou, 2014: 12). The one that pertains to the task at hand is what is generally known as internal fragmentation that "… emphasises the number of parcels exploited by each user and considers parcel size, shape and distance as the main issues" (Demetriou, 2014: 12). Thus, in this context, land fragmentation refers to a situation where "… the cultivators' land is distributed among many parcels or fragments, often of very small size …" (Daniel et al., 2015: 2). In the same vein, synthesizing earlier work on the subject matter, Asiama et al. (2017) defined land fragmentation as "… the spatial dispersion of a single farm holding into several distinct parcels over a wide area usually separated by other farms, as well as a high density of land users on a small farm" (40).

Ethiopia's agricultural policymakers thus face the multiple task of catapulting an agricultural regime characterized by small and fragmented holdings into an efficient, resilient, duly organized, and market-oriented production system capable of feeding the nation and supplying its nascent agro-industries with the needed raw materials.

1.3 Organization of the Discussion Paper

The remainder of the text is organized as follows. Section Two describes the purpose and objectives. Section Three provides an overview of the extent of farmland fragmentation in Ethiopia and discusses the different perspectives informing the debate on land fragmentation in the global South. Based on the recent relevant literature and emerging evidence from the field, Section Four outlines the main issues that need to be critically evaluated in designing farmland consolidation initiatives and the lessons that can be derived from selected international experiences. Section Five discusses experiences with land consolidation-type efforts in Ethiopia, including preliminary results from a recent field survey conducted to elicit farmers' attitude toward land consolidation. Section Six presents thoughts on key methodological issues that need to be considered in implementing voluntary land consolidation. Section Seven examines the extent to which land laws in Ethiopia provide the legal basis for initiating farmland consolidation. Section Eight concludes by making a case for action research in facilitating a voluntary land consolidation (VLC) initiative and identifies the partnerships and work packages that such an action research initiative could embrace.

Photo: CIAT/G. Smith

2. Purpose and Objectives

2.1 Purpose

The major point of departure for this Discussion Paper is the realization that a productive and efficient agricultural sector in Ethiopia remains a pipe dream without an efficient use of the country's heavily fragmented land resources through, among others, reconfiguring the rural space economy using land consolidation measures. In this context, land consolidation is understood broadly as a sequence of operations designed to reorganize land parcels in an area. It is also recognized that tools and perspectives from such disciplines as geographic information systems, economic sciences, and anthropology can help deliver on the promise of a space-efficient rural land economy.

Thus, the main purpose of this Discussion Paper is to portray the importance of land consolidation as a vehicle for addressing the challenges of land fragmentation in Ethiopia. By advocating for the importance of farmland consolidation as an integral part of Ethiopia's agricultural transformation agenda, the document seeks to influence all stakeholders to make informed decisions that would enable the myriad small-scale producers to create wealth.

The Discussion Paper synthesizes some of the salient issues that have a bearing on farmland fragmentation and consolidation; it doesn't claim to be an original piece of work. Neither does it claim to be an exhaustive document. However, to the extent that this document contains key issues of programming relevance for land consolidation, the document could as well be considered as an advocacy tool for resource mobilization, providing guidance to technical and financial partners on how they can support voluntary land consolidation in the Ethiopian context.

The above notwithstanding, the document should be regarded as a living thought piece that provides a balanced account of the virtues and sensitivities of land consolidation, the step-wise approach that needs to be pursued in addressing the challenges of land fragmentation, and the

priority thematic areas of investment for which an action research package could yield more meaningful results.

Thus, this document is expected to be of considerable value to a range of stakeholders, including farmers' associations/cooperatives; agribusiness and other value chain actors, including those involved in the bulk purchase of crop produce; the Ministry of Agriculture and regional agricultural and land administration bureaus; agricultural research institutes and development policy centers at subnational, national, and global levels; academic institutions, especially those with faculties of agriculture and land administration/land-use planning; and international development organizations supporting agricultural development and land administration.

In parts, this Discussion Paper raises substantive issues as they relate to the evidence base for/against land consolidation, the legislative basis for land consolidation in the different regional states of the country, and the feasibility of a land consolidation initiative in the current land tenure and agrarian structure in which land is considered as an entitlement to those who farm it. Thus, this Discussion Paper invites a discourse around these issues and calls for further contributions and fresh insights. In short, an important purpose thus framed is to provoke reflections and generate comments from a wide array of stakeholders.

The genesis of this document dates back to an expert consultation meeting that CIAT and TMG gGmbH[1] organized in February 2018 in Addis Ababa, Ethiopia, to discuss *Opportunities for farmland consolidation in Ethiopia – An action research agenda*.[2] The meeting, among others, brought to light the dearth of information on the challenges of farmland fragmentation and the importance of initiating land consolidation measures, taking due cognizance of the sensitivities surrounding the issues. These prompted CIAT to develop a thought piece that would not only provide pointers for a possible action research pilot project on land consolidation but also serve as a living programmatic framework document that would provoke debate and discussion on how voluntary consolidation in Ethiopia's mixed farming agricultural production systems could best be initiated. An earlier abridged version of this draft document was shared for review and comments with a wider group of stakeholders both at the above-noted expert meeting and at a conference organized by the Institute of Land Studies of Bahir Dar University. The inputs thus generated helped produce this enlarged revised version.

2.2 Aims and objectives

The text has three interrelated aims and objectives:

- To explore the problematics surrounding farmland fragmentation and the promises of land consolidation,
- To assess the extent to which these have been appreciated at the policy level in Ethiopia,
- To provide thoughts on key technical issues that need to be considered in implementing voluntary land consolidation, and
- To identify possible programmatic partnerships and work packages that should constitute an action research agenda aimed at informing sequential and systematic rolling out of problem-oriented and needs-based voluntary land consolidation in the country.

1 TMG = Think Tank for Sustainability, Berlin, Germany.

2 The meeting was attended by a total of 26 senior land-use and land administration professionals representing the Ministry of Agriculture (MoA) and Amhara Environmental Protection and Land Use and Administration bureau, academic/research institutions largely from Amhara Region, and technical partners, including LIFT (Land Investment for Transformation, Ethiopia Programme, a DFID-financed technical assistance program for the MoA with a focus on issuing second-level (i.e., geo-referenced) land certification) and REILA (Responsible and Innovative Land Administration, Ethiopia Programme, a Finnish-supported technical assistance program for MoA with a focus on facilitating local land administration issues in some of the less populated regions of the country.

2.3 Methods

The document employs a combination of methods to meet the objectives set out above. First, a literature review and documentary analyses have been employed to understand the various perspectives from which farmland fragmentation and land consolidation are viewed. Documentary analyses also informed the experiences of countries of diverse ideological persuasions and developmental achievement with respect to land consolidation. Relevant literature was also consulted to distil conceptual and technical issues that need to be considered in implementing voluntary land consolidation in an informed manner. Furthermore, the quest for understanding the policy stances concerning farmland fragmentation and land consolidation in Ethiopia made it imperative to undertake a careful review of Ethiopia's land laws.

The second method is a questionnaire survey, which was used to understand whether farmers perceive land fragmentation as a challenge and the extent to which they consider land consolidation as an opportunity. In this respect, two rural *kebeles* were selected on the basis of criteria pertinent to the task at hand[3] and a questionnaire was administered to 20% randomly selected farm households in each *kebele*, which translated into a total sample size of 395 households. Some aspects of the questionnaire data were analyzed using standard statistical analysis.

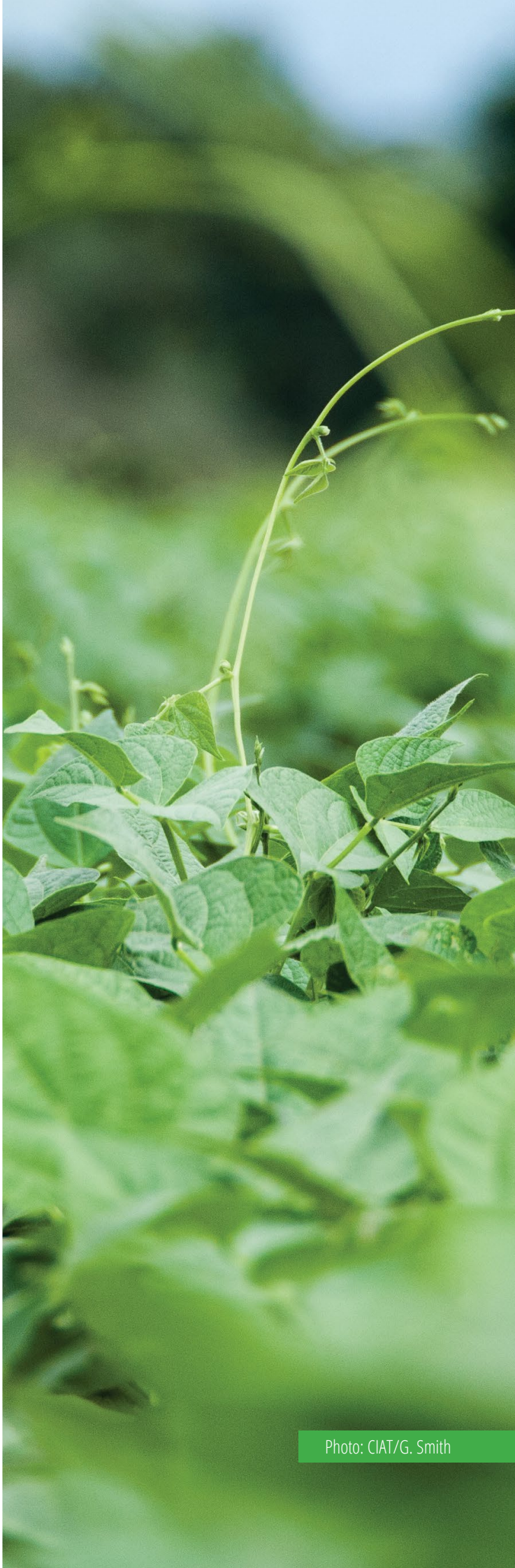


Photo: CIAT/G. Smith

3 The study kebeles are Addis-Gulit in Gozamin *Woreda* of East Gojjam Zone and Aba Jale (aka 05) in Woreillu *Woreda* of South Wollo Zone. The following were used as bases for site selection in the administration of the household survey: (a) areas characterized by considerable land fragmentation; (b) presence of second-level land certification (with all the associated advantages of ascertaining geo-spatial data on fragmentation and parcel dispersion); (c) optimal distance from nearby towns: sites not adjacent to towns, given the fluidity/unsettled status of town boundaries in most cases, but sites not too far away from urban settlements so as to facilitate commuting; and (d) sites with more willing/agreeable local administrative officials.

Photo: CIAT/L. Tamene

3. Agricultural Land Fragmentation: Extent and Conceptual Perspectives

3.1 A glance at farmland fragmentation and parcel dispersion in Ethiopia

As noted earlier, farmland fragmentation is a typical feature of Ethiopia's mixed farming agricultural production system, in which smallholder crop agriculture dominates. The factors that caused and/or precipitated farmland fragmentation in Ethiopia vary from one location to another. In general, several factors cause land fragmentation, of which the principle of equity in land reallocation adopted as part of the implementation of the radical land reform proclamation of March 1975 is the chief one. Specifically, the imperative of providing farm households with access to different qualities of arable land meant that households of the time acquired different land parcels from *lem* (fertile), *lem-tef* (moderately fertile), and *tef* (abandoned/ with vegetation cover) categories. Such a practice also informed family allocation of land as and when offspring came of age. Also, during subsequent land redistribution drives, some form of parcelization took place, especially with regard to ensuring equitable access to irrigable land.

Attempts at examining the root causes of the poor performance of agriculture in Ethiopia have in part been directed toward understanding the role land fragmentation has played in hindering agricultural growth. Based on recent studies, this section aims to review the extent of farmland fragmentation in the ox-plough culture characteristic of mixed farming systems.

The recently released draft National Land Use Policy document acknowledges the challenges of land fragmentation thus:

Population growth, lack of intensive farming technologies, and inheritance of land use rights have resulted in scattered landholdings and fragmented land uses, making them too small and difficult to apply land management and improved technology to boost production, increase product quality, and reduce costs of production. Consequently, they are overexploited and seriously degraded to provide a viable livelihood for small-scale farmers (NILUPPDPO,[4] 2019: 10).

According to a study conducted in two widely differing farming communities in northwest Ethiopia, farmers operate up to 14 scattered plots and 68% of the farm households cultivate anywhere from 4 to 14 plots. Moreover, half of the plots were found to be below 0.2 hectare each (Teshome, 2009: 14). More recent surveys conducted by the Ministry of Agriculture and Livestock also report similar findings. For instance, at a rural *kebele* some 300 km northwest of Addis Ababa, farm households cultivate up to 19 scattered plots and close to 60% of the farmers cultivate anywhere from 4 to 19 plots.

In the same vein, a preliminary analysis of the field data we obtained recently showed that farmers operate up to 15 scattered plots and 64% of the households cultivate anywhere from 4 to 15 plots. Moreover, more than 70% of the plots were found to be below 0.3 hectare each.

In addition to the sheer number of parcels, any analysis on farmland fragmentation has to explore the geographic dispersion of the plots themselves. Figure 1 shows an example of the extent of farmland fragmentation/plot dispersion in West Gojjam Zone of Amhara National Regional State.

Evidently, given the wide dispersion of the 21 plots, the farmer operating these parcels, most of which are less than 0.15 hectare, is expected to face significant challenges in managing all the plots efficiently. Needless to say, the task of land consolidation in this respect should first be to understand the reasons for plot dispersion and the specific merits and demerits of land fragmentation as perceived by the farmers. This should then be followed by a careful analysis of the trade-offs involved in land swapping and the potential benefits of land consolidation under different consolidation scenarios, including clustering of plots into an acceptable number of parcels.

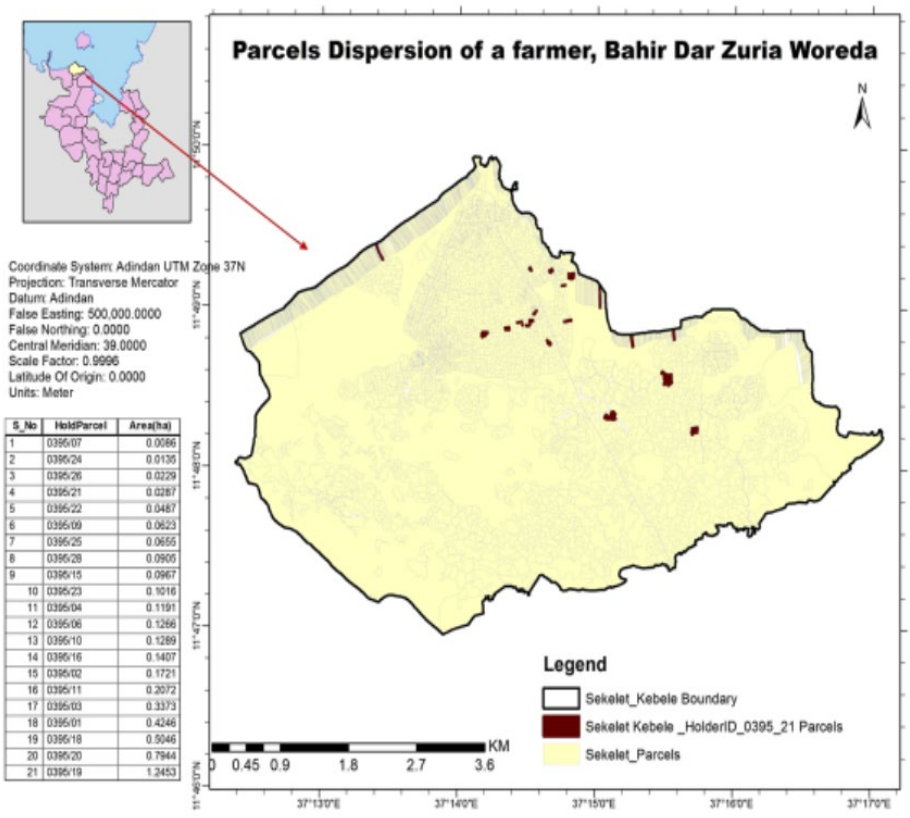


Figure 1: Example of parcel dispersion in Amhara National Regional State (Courtesy of Dr. Zerfu Hailu, REILA).

4 NILUPPDPO = National Integrated Land Use Planning and Policy Development Project Office.

3.2 Conceptual perspectives on farmland fragmentation

For several decades now, the issue of agricultural land fragmentation has been an important domain of research among agricultural economists, rural spatial planners, and development anthropologists alike. However, there is no universal agreement among analysts concerning the productivity/efficiency effects of agricultural land fragmentation.

Several researchers argue that land fragmentation puts undue pressure on farmers in terms of travel time between spatially dispersed parcels and entails additional costs for moving inputs and outputs to and from residential quarters. Indeed, our own research has shown that 75% of farm households pointed to the adverse effects of fragmentation. Commonly cited reasons for this include longer travel time to reach the dispersed parcels and the additional farm monitoring costs that fragmentation entails.

Since agriculture in Africa is increasingly operated by older farmers,[5] and in view of the tendency of youth in Ethiopia to abandon agriculture in search of other livelihoods (see Sosina and Holden, 2014), time allocation for, and labor constraints to, agricultural operations becomes even more critical. On the other hand, land fragmentation and the fact of farmers operating on discontinuous fields are said to militate against the expansion of improved mechanical technologies and efficient use of irrigation (Demetriou, 2014: 13–15). In this respect, a highly-regarded study that drew case materials from differing scales of wheat and paddy rice farms in India has concluded that "... the effects of fragmentation [on the cost of cultivation] vary with farm size and that fragmentation-induced increases in the unit cost of production are largest for marginal farmers" (Deininger et al., 2014: 2). In a similar vein, a recent study among subsistence farmers in three *woredas* (i.e., districts) of northwest Ethiopia, where land fragmentation is a typical feature of the agricultural landholding scene, has concluded that "... land fragmentation has a negative effect on yields and leads to small and uneconomic size of operational holdings" (Gashaw et al., 2017: 5).[6]

At the other end of the spectrum, some analysts view agricultural land fragmentation in a positive light. Concurring with the findings of earlier studies from other lands, some Ethiopian researchers emphasize that fragmentation enables farmers to pursue crop diversification and exploit the different microenvironments within which farming is practiced. Fragmentation is also regarded as an insurance policy since it helps mitigate the risk of complete crop failure (see Fassil, 1980; Dessalegn, 1985). According to a recent World Bank study in Rwanda, land fragmentation, and by implication the practice of cultivating different varieties of crops on the diverse plots of land, is said to have decreased the incidence of crop shocks and even helped enhance yields and productive efficiency (Daniel et al., 2015). This same study has, however, indicated that agricultural risk is a solvable challenge. It mentioned, for instance, that availability of crop insurance could help decrease production risk, thereby minimizing the potential positive contribution of fragmentation toward risk management.

Recent literature that looks at agricultural land fragmentation in a nuanced manner cautions against a blanket view (be it favorable or dismissive) of the productivity effects of agricultural land fragmentation and, instead, underlines the need to assess the context within which fragmentation occurs (see Daniel et al., 2015; Deininger et al., 2014; Paul and Githinji, 2017). Paul and Githinji (2017: 14) succinctly summarized the problematics surrounding the productivity effects of agricultural land fragmentation:

> *The benefits of fragmentation are related to plot variety, while costs are determined by distance and management. Given this, it is important to examine carefully the role that fragmentation plays, and to differentiate between situations where fragmented holdings contribute to increased yields and where they are an impediment. In instances where labour is generally in surplus, and provided by family members, there may be little reason to expect the distance to a plot to be negatively associated with yields in smallholder agriculture.*

5 "In Africa, the average age of farmers is also about 60, even though 60 per cent of Africa's population is under 24 years of age. So, as farmers are getting older – and as many of them are women with less access to productive resources ... – this raises questions about prospects for increasing farm productivity" (FAO, 2014: 2).

6 Contrary to this, using "nationally representative" data collected from Ethiopia in 2000 and 2001, Paul and Githinji (2017) reported strong positive correlation between land fragmentation and agricultural land productivity. The authors, however, acknowledged limitations of the dataset on which their analysis was based. Moreover, they proposed that "[a]dditional studies that replicate this finding in other geographical regions would be informative and could shed additional light on the potential dynamics of fragmentation" (13).

Photo: CIAT/G. Smith

4. Land Consolidation: Issues, Principles, and International Experiences

4.1 Opportunities and issues

Land consolidation is expected to provide a wide range of opportunities critical for economically worthwhile and environmentally sustainable agricultural development. Some of these are summarized below.

Land consolidation, in and of itself, doesn't increase the land fund per se. However, land consolidation will enable farmers to operate on fewer parcels that are larger and better shaped. This is expected to allow farmers to introduce improved farming techniques, including mechanization services, into their farming operations. Moreover, land consolidation will result in better use of farm equipment and other fixed assets. These, in turn, are expected to enhance land productivity. In addition, the expected effective work organization and supervision as well as the enhanced transport efficiency to and from residential places that land consolidation engenders are likely to bring about improved labor productivity. Land consolidation also makes it possible to decrease the average costs of farm inputs and enhance the profitability of farm enterprises, and increase opportunities for public and public-private investment in agriculture-related infrastructure. Such moves are also likely to create incentives to attract youth into farming and agribusiness. In general, land consolidation has the potential to facilitate the creation of a dynamic and competitive agricultural production regime.

On the other hand, land consolidation is considered as a worthwhile complementary investment that could improve the efficiency of rural land use and help address the challenges of sustainable rural development (for details, see Ho and McPherson, 2010; Huang et al., 2011). In

particular, land consolidation has the potential to engender improved management of natural resources, for it creates the foundation for better land-use planning and land management. Thus, potential conflicts between the promotion of economic growth in the agricultural sector and the protection of the environment can be avoided through integrated local land planning and effective coordination of all interests (see FAO, 2003).

It is worth noting that all fragmentation is not necessarily undesirable; thus, the objective of land consolidation should not be to do away with land fragmentation in its entirety. "Fragmentation of holdings will and should occur as farmers respond to changing market conditions by periodically expanding and contracting their operations by leasing land in or leasing it out.... Land consolidation must address cases where land fragmentation is a problem and not impose a solution where it is not needed" (FAO, 2003: 15).

Indeed, analysts point out that the drive for land consolidation has the potential for exacerbating existing inequalities and that this scheme should not be assumed to be free of distributional implications. In particular, larger farm operators are likely to reap higher benefits than the rest, for they have the potential to raise the capital necessary to mechanize their operations pursuant to land consolidation. At any rate, poor individual farmers may not necessarily opt for land consolidation, since "... the information and coordination costs of unilaterally attempting to consolidate land by adding contiguous parcels to their holdings outweigh the potential benefits (Ho and McPherson, 2010: 27). This – the "first-mover problem" – is a well-known dilemma in decisions involving collective action.

Although the above point to the importance of active mediation, including government policy and programmatic backing, it may be advisable to pursue a cautious approach that weighs the productivity advantages of land consolidation against the potential private and social costs of labor displacement from agriculture arising from large-scale land consolidation drives. Indeed, long-time observers of rural land tenure and land markets in developing countries underscore that public-supported consolidation programs are likely to succeed in situations where there is an active land market, a verifiable and up-to-date land record system, and a movement toward net migration out of agriculture (Deininger et al., 2014: 13).

4.2 Approaches to, and principles of, land consolidation

The type of land consolidation a country wishes to pursue is contingent on the stage of readiness in which it finds itself and the objectives for which land consolidation is sought. In general, the relevant literature identifies four approaches to land consolidation (after FAO, 2003), all of which lie along a continuum:

- ***Comprehensive land consolidation:*** This is the most advanced form of land consolidation in which – using integrated rural spatial planning approaches – reallocation of parcels is done in conjunction with construction/rehabilitation of a range of technical infrastructure necessary to boost agricultural productivity and enhance environmental protection.
- ***Simplified land consolidation.*** This is a watered-down version of the above, in which the focus is on reallocation or exchange of parcels, and the provision of additional land from land banks. However, such an approach is pursued deliberately to lay the foundation for the "comprehensive" version.
- ***Voluntary group consolidation.*** This refers to small-scale, localized voluntary agreements entered into by a small number (or groups) of farmers to address specific challenges of land fragmentation.
- ***Individual consolidation.*** This is largely undertaken outside of the realm of state involvement or support. In this case, consolidation of holdings is done on an informal one-on-one basis and tends to be sporadic in nature.

Each of the above approaches has its own merits and the state has a duty to provide a supportive environment so that land consolidation delivers on the task of boosting agricultural production and productivity at the minimum. In this regard, the empirical literature on land consolidation considers the following as the main principles that need to be adhered to in pursuing modern approaches to land consolidation (Box 1).

Box 1.

- *Recognize the need for diverse local solutions.*
- *Voluntariness and the consent process should be participatory, democratic, and community-driven.*
- *The approach should be cross-sectoral: embed land consolidation within a comprehensive landscape approach.*
- *Prioritize learning; employ a phased approach.*
- *Let community renewal and sustainable management of natural resources be the end game.*

4.3 Some selected international experiences with land consolidation

As will be shown below, land consolidation is yet to be systematically introduced in Ethiopia. Hence, the country can reap the benefits of the late-comer advantage. In particular, Ethiopia could benefit from the conceptualization, organization, management, and modus operandi of land consolidation initiatives undertaken by countries at a similar level of development and/or those that share a historically relevant political/developmental trajectory with it.

In a nutshell, international experiences underscore that land consolidation initiatives lie along a continuum involving two major components at the opposite ends of the spectrum: *land reallocation and agrarian physical/spatial planning* (Thomas, 2006).

For instance, the rural land consolidation experiences of **Kenya** and **Rwanda** fall under the first component, although the manner in which land reallocation had been brought about as well as the overall distributional impact of the process in those two countries differ markedly. Briefly, Kenya used market mechanisms in its attempt at land consolidation whereby small landholdings had been replaced by large-scale farms with the view to raising farm productivity. Nonetheless, as time went by, the new landholders started subdividing their land to the benefit of their heirs in accordance with the dictates of customary tenure (for details, see Ntirenganya, 2012).

On the other hand, in Rwanda, *land use consolidation* (LUC), pursued since 2008, has been an operational instrument of the country's Crop Intensification Programme. "Farmers retain individual ownership of their parcels under LUC but agree to consolidate aspects of their operations within the program. The LUC program dictates that the minimum size of a consolidated plot should be 5 ha...." (USAID, 2014: 40). Under LUC, participating farmers are required to cultivate a single priority crop as per the dictates of the country's agricultural planners, thereby effectively supplanting the practice of mixed crop farming that Rwandan farmers were known for. In exchange for this, participating farmers would be given priority access to a range of agricultural inputs and extension advice and support. Several evaluation reports have hailed LUC for helping raise the volume of production of the priority crops, a key consideration from the perspective of national food security ideals. Some of these reports are either silent or meekly criticize the scheme for its detrimental effects on household food security and nutrition. LUC has also been implemented as an instrument of rural settlement planning: housing units located in areas perceived to be suitable for the cultivation of priority crops would be moved elsewhere in accordance with laid-down rules and regulations that also involve payment of compensation to the affected families.

Closely related to the above scheme is what is known as *block farming*, which has been in operation in some West African countries such as **Ghana** for about a decade now. This is a type of land-use consolidation arrangement in which several farmers in contiguous locations (or blocks) are brought together onto one large production area and (often) the government provides them with extension services and credit in the form of mechanization services, certified seed, subsidized fertilizer, and pesticides. The cost of the mechanization services and inputs (seed, fertilizer, and pesticides) is recovered in-kind at the time of harvest.[7]

This scheme has attracted both praise and criticism. While some thought that *block farming* has helped raise farm yields and curb rural unemployment, its detractors have argued that input packages had been forced upon

7 For details on this, see http://gssp.ifpri.info/institutional-alternatives-to-implement-block-farming/.

the participating farmers and that farmers were subjected to high rates of interest that resulted in them losing a lot of their crops (see Amanor, 2012). Other findings contest this conclusion, although these reports concede that the loan recovery rates are very low (IFPRI, 2011). Block farming is also being pursued in **Nigeria**, involving a consortium of private-sector actors. There, too, the business model focuses on creating "a nucleus of minimum efficient scale by aggregating smallholders" and providing financing, crop insurance, farm inputs, tractor/mechanization services, and market access support to participating farmers. Such a multifaceted support to farmers and the de-risking of the investment are expected to ensure a decent return to both investors and smallholders through increased productivity and crop yields (for details, see Alluvial, 2018).

With its socialist past, **Vietnam** also presents another interesting example of rural land consolidation experience. The constitution of Vietnam stipulates collective ownership and state management of land resources. However, since 1988, a series of land policy-related reforms have been enacted within the umbrella of developing a "market-driven economy with a socialist orientation." One such measure is land consolidation, which is considered necessary for enhancing agricultural productivity. Indeed, this coupled with other complementary measures has enabled more efficient farmers to boost the scale of their farm operations (Ho and McPherson, 2010). According to one micro-level study, "[a]s a result of land consolidation, the average number of agricultural land parcels of each household dropped from 20–25 pieces to only 1 or 2 parcels. Agricultural productivity roughly doubled, and most of that increase can be attributed to the application of new technology, which is facilitated by land consolidation and infrastructure development" (Chen and Pham, 2017: 7). The gains reported here, however, have been made possible through long, arduous, iterative, and consultative processes. Indeed, given the high potential social, economic, and political consequences, the government of Vietnam has long preferred inducing farmers to voluntarily consolidate rather than employing administrative means to this end (Ho and McPherson, 2010).

The experience of European countries with respect to land consolidation varies considerably. Suffice it here to note that land consolidation in **Central and Eastern Europe** has, over the years, evolved to combine the tasks of land readjustment with integrated rural spatial planning. This process has enabled many of these countries to bring about efficient multiple use of rural space: land consolidation has served as a useful instrument of land-use planning and zoning, a means of promoting environmental conservation and nature preservation, and a tool for promoting community-based tourism and other land-based service functions in rural areas (for details, see Thomas, 2006).

For instance, in **Serbia**,[8] a country with a long tradition of bringing about land consolidation, land consolidation is defined as a system of spatial planning, involving a range of technical, legal, organizational, economic, and social measures aimed at improving the natural, economic, and environmental conditions of a land territory with the ultimate objective of providing quality living and working conditions and ensuring environmental protection. The main principles that undergird the current land consolidation drive in Serbia include the following: agricultural land is a natural resource and public good, and the planning, protection, use, and management of agricultural land should be pursued in ways that safeguard the public interest.

Although the Serbian experience with land consolidation is decidedly a state-directed affair and has a compulsory character, implementing the scheme has necessitated a series of awareness-raising campaigns, including seminars and peer-to-peer experience-sharing and lesson-learning events. Moreover, the process has been accompanied by significant administrative and technical capacity-building efforts as well as the development of technical manuals that range from geodetic systems to land evaluation procedures.

In a nutshell, the experiences of Central and Eastern European countries point to the fact that land consolidation is a highly iterative, participatory, and knowledge-intensive technical and administrative exercise that demands active and extensive involvement of a range of professionals, including GIS specialists, land-use planners, land management professionals, resource economists, and conflict management specialists working in dedicated teams (Demetriou et al., 2012).

8 The information on recent experiences with land consolidation in Serbia draws heavily from Andrić, A. and Gvozdenović, N. 2018. PowerPoint presentation on land consolidation experiences in Serbia as part of the GIZ-financed project "Strengthening Municipal Land Management in Serbia," 30 May, Addis Ababa, Ethiopia.

Photo: CIAT/L. Tamene

5. Land Consolidation-type Efforts in Ethiopia: A Review of Experiences and Some Reflections from the Field

5.1 A glance at the record to date

Ethiopia has for decades considered smallholder agriculture as a key player in its quest for economic transformation. To this end, especially over the past two decades, the Ethiopian government has put in place several policy measures and undertaken progressive programmatic actions to enhance farm productivity, improve market linkages, and, as shown in Section Six below, strengthen tenure security. However, as indicated above, concern exists that the limited interest of youth in agricultural/farming operations and the highly fragmented small-scale landholdings (some of which are awkwardly shaped for farming purposes) may not bode well for reaping the advantages of economies of scale and economies of scope that are so central to bringing about agricultural transformation where subsistence agriculture predominates. Past attempts at resolving this conundrum through the establishment of agricultural producers' cooperatives resulted in abject failure largely because the aggregation of land under such units had been undertaken in a top-down manner, with virtually no meaningful input from the peasant farmers who were meant to constitute the collectives. In addition, cases of "free riders" emerged as there was no effective governance structure to ensure that benefits were enjoyed based on merit and contributions to the objectives of the collectives.

At present, short of promoting large-scale commercial farming, no nation-wide programmatic initiative has been launched to promote land consolidation among the country's more than 13 million farm households. However, over the past two decades, several isolated projects have been implemented that necessitated pulling together contiguous farmlands to fulfill the respective project objectives.

Thus, the in-country experiences discussed here do not qualify as land consolidation drives per se; however, they could provide useful pointers for initiating and sustaining market-induced and fully fledged land consolidation programming in the country. In this respect, the most outstanding ones include irrigation projects, in which scattered plots have been merged to facilitate efficient use of irrigation facilities.[9] This approach is more akin to the *voluntary group consolidation* version discussed earlier (see Section 4.2 above).

Contract farming represents another scheme worth noting in any discussion on land consolidation. After all, whereas contract farming represents vertical coordination, land consolidation signifies horizontal coordination in farming operations (see Ahearn et al., 2002). Although contract farming does not in itself demand land consolidation, the need for fulfilling contractual obligations could motivate farmers to collaboratively manage their farming operations, thereby helping to realize some of the potential merits of land consolidation. A case in point in this regard is the effort that the Ethiopian Agricultural Transformation Agency (ATA), in collaboration with Ethiopian Institute for Agricultural Research (EIAR) centers, has been exerting to facilitate contract farming schemes with exporters of chickpeas in central Ethiopia. Some private sector-driven contract farming initiatives may also have interesting ramifications for land consolidation. Examples include the contract farming arrangements that some of the international breweries have entered into with barley farmers in different parts of the country. Also, the drive toward engaging smallholders as contract farmers in sesame cultivation in northwest Ethiopia is said to have resulted in substantial gains for participating farmers. In the same vein, the Ethiopian Seed Enterprise, a mandated government parastatal, as well as private-sector seed companies involve selected farmers in different regions of the country in contract farming operations to produce registered/certified seeds.

On the other hand, ATA has also recently embarked on an *Agricultural Commercialization Clusters* (ACC) strategy, whose basic tenet is the conviction that integrated interventions in, and intensive focus on, a selected number of high-potential commodity value chains and geographies will facilitate the pace of agricultural transformation in the country. Also, "… the ACC Initiative has been designed and planned to closely link with the country's Integrated Agro-Industrial Park (IAIP) development" (ATA, 2017: 12). To this end, during the current GTP II period, the ACC Initiative has selected for implementation a total of eight largely crop-based *primary and priority commodities* in a total of 239 *woredas* across the four major regions of the country. This initiative has also identified and prioritized a range of bottlenecks and ways of overcoming them. Of particular interest in this context is the emphasis the initiative has given to the insufficient access to mechanization services and the need for promoting contract farming arrangements for most of the cereal-based commodity value chains. "Groupings of five to ten adjacent woredas" to support rollout of the scheme and putting in place a "strong and viable aggregation mechanism" have been touted as among the key design principles of the ACC Initiative (ATA, 2017: 24). Indications are that the ACC approach could engender harmonization of production decisions among participating farmers who may opt to set aside contiguous plots for the task, thereby helping create the foundations for the emergence of some elements of land consolidation drives. This approach shares some degree of similarity with the *block farming* and *land use consolidation* schemes being tried out in parts of sub-Saharan Africa (see Section 4.3 above).

Consolidation of farmland use and clustering are also among the policy statements enunciated in the draft National Land Use Policy (NILUPPDPO, 2019: 10).

9 One such example is the Koga Irrigation and Watershed Management Project, which has been operational in northwest Ethiopia close to the source of the Blue Nile River. The dam on the Koga River, which is the centerpiece of the project, and the reservoir created thereof was planned to be used for 7,000 ha of smallholder dry-season irrigation, with the intention of improving food security and the livelihoods of the people living in the area (Ayalew et al., 2007).

Anecdotal evidence also points toward the prevalence of farmer-led land exchange transactions in major cereal-farming areas of the country. This often takes on the form of informal land swaps largely to construct residential quarters along nearby main roads and/or to be closer to major social amenities. It can be surmised that land lease and, to a less significant extent, inheritance are the main mechanisms available to farmers to enlarge their holdings. However, it's doubtful whether these outlets could be relied upon to bring about large-scale comprehensive farmland consolidation. At any rate, to date, no systematic studies have been undertaken that document the possible lessons of experience that voluntary land exchange transactions could provide to fully fledged land consolidation drives. Thus, viewing the practice of informal (and, at times, short-term) land exchanges from the prism of land consolidation represents a fruitful action research agenda going forward.

On the other hand, especially in Amhara National Regional State (ANRS), attempts are being made to establish *rural kebele centers* with the stated objective of bringing farmers closer to social services and discouraging illegal settlement in rural areas of the region (Adane, 2018). Figure 2 shows a typical rural kebele center being established in ANRS.[10] This process is enshrined in the regional land proclamation and is thus expected to be carried out with more vigor in the years to come. An issue worth exploring in this respect is the extent to which this "villagization" drive could spur farmland consolidation in ways compatible with the new rural settlement plans.

Figure 2: Aerial view of a rural kebele center in ANRS (Photo: A. Mehari/EPLUA/ANRS)

5.2 The prospects: a general reflection

It is worth noting here that Ethiopia has a relatively well-functioning, if underappreciated, rural land market, especially when seen against the constraints that state tenure in land resources imposes. In particular, farmers are legally entitled to lease their plots for a varying length of time depending, in some regions, on the purpose for which the land is leased out.[11] On the other hand, the country has embarked on an ambitious rural land registration and certification program, which many analysts regard as a worthwhile investment that has helped diminish land-use conflicts, enhanced tenure security, and

10 As of May 2018, a total of 2,931 kebele centers had secured a land-use plan; for 741 kebele centers, site maps had been produced; a total of 53,686 users were provided with plots on which to build residential quarters; and 18,864 households had started building their houses (Adane, 2018).

11 In the Amhara National Regional State, for instance, land to be used for the cultivation of annual crops can be leased for up to 10 years while plots meant for cultivation of tree crops can be leased for up to 30 years (ANRS, 2017, Article 15.9).

incentivized rights-holders to make long-term investments in their plots (Deininger et al., 2011). Regarding net migration out of agriculture, the paucity of evidence makes it difficult to reach firm conclusions. In general, mainly because of the slow pace of urbanization in the country, rural youth are expected to remain an important component of the agricultural labor force in the years to come (Schmidt and Firew, 2016). Yet, in some of the more densely populated rural areas of Ethiopia, such as those in the southern region, where youth have limited access to agricultural land because of land scarcity, a substantial rise in youth (spontaneous) outmigration has been observed. At any rate, as noted earlier, in such regions a very small portion of rural youth plan to pursue agriculture as their livelihood (Sosina and Holden, 2014).

In short, all the above three necessary conditions for setting in motion a land consolidation process appear to be present in Ethiopia, although regional variations may exist, especially with respect to net outmigration from agriculture. Evidently, assessment of the conditions under which land consolidation could take place in the diverse regions of Ethiopia constitutes a worthwhile agenda for research and policy dialogue.

5.3 The view from the field

A preliminary assessment of the survey data from the case study kebeles referred to earlier has shown that a significant number of interviewed farm households (more than 80%) see considerable value, in principle, in farmland consolidation. However, they are unsure as to how this could be done in a participatory, fair, and effective manner.

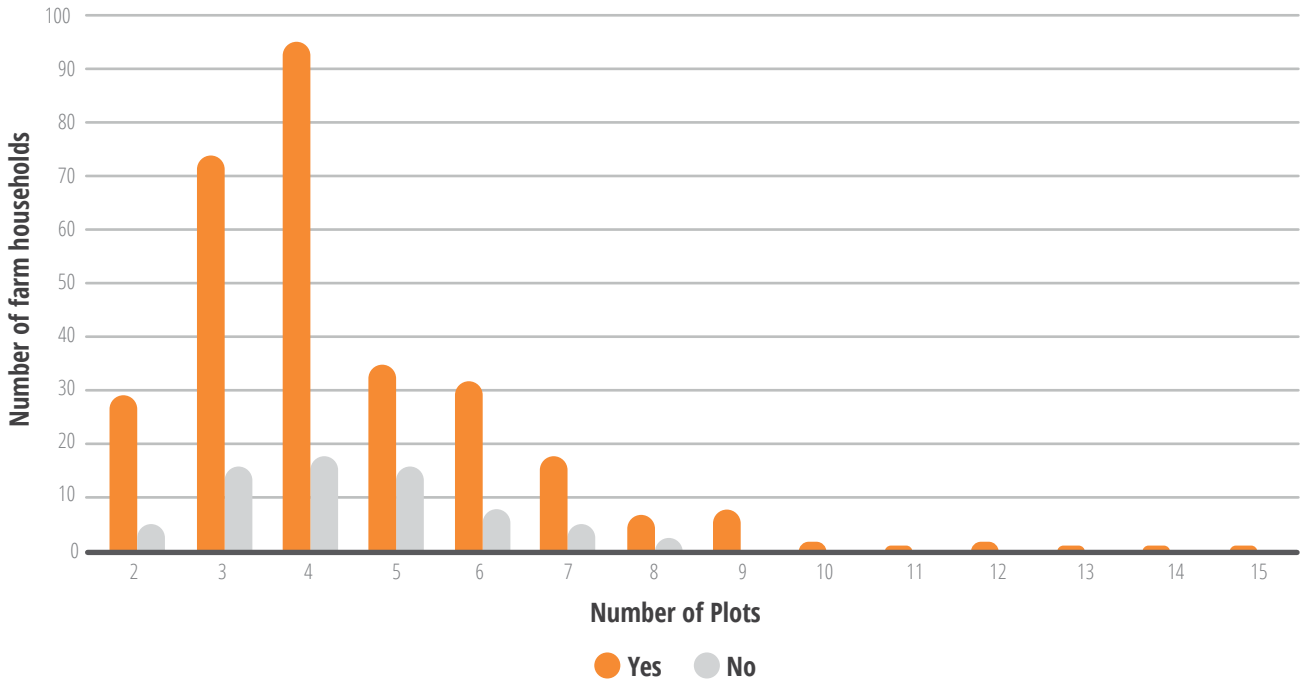


Figure 3: Number of plots operated by farm households that expressed views on land consolidation.

It is evident from the above that all of the farm households that operate more than eight plots were in favor of land consolidation (Fig. 3). For almost all farm households interviewed, the factors that prompt them to view land consolidation positively include the opportunity land consolidation affords them to employ labor-saving mechanical technologies and the expectation that land consolidation would enable them to put more land under irrigation (including opportunities to intensify the use of underground water for supplementary irrigation). On the other hand, availing of short-maturing crops and opportunities for involvement in crop insurance schemes were regarded as useful incentives for partaking in a voluntary land consolidation drive.

Photo: CIAT/G. Smith

6. An Overview of Some Key Technical Considerations in Implementing Voluntary Land Consolidation

6.1 Introduction

Land fragmentation is essentially a spatial problem, and understanding the magnitude of spread of parcels, their shape and spatial distribution in relation to different biophysical and infrastructural conditions forms the basis for land consolidation. Other factors such as parcel ownership, type, and parcel location in relation to infrastructure (with different importance levels to different actors) are also of significant value. Finally, cultural variables including customs, practices, and values influence land consolidation efforts (Stanik et al., 2018; Xiao et al., 2018; Strerk and Noga, 2019), hence should be given deserved attention.

The above attributes and factors make implementing land consolidation a knowledge intensive process that requires detailed information and associated analytical approaches as well as close support from community and political entities. Operationalization of voluntary land consolidation requires participatory engagement as well as iterative discussions and negotiations with farmers who operate farmlands/agricultural plots that exhibit different risks and potentials. As a result, the process of land consolidation should build on sound, knowledge-based, and informed decision-making. It is necessary to have an understanding of the 'value' of each plot/farmland and the perception of each 'operator' to corresponding plots in order to undertake rational and fruitful land consolidation especially in developing regions where data scarcity is a critical challenge.

6.2 A review of approaches and methodologies for supporting land consolidation

Figure 4 provides a simplified schematic presentation of the processes that involve voluntary land consolidation. The figure depicts that data acquisition, consultation, analysis of alternatives, and negotiation are key steps to follow when implementing land consolidation in the form of re-allocation. The journey along those steps, the intensity of effort needed, depend on the complexity of the socio-economic and agro-ecological system under consideration and the availability of quality data to make transparent and informed decisions.

Several approaches and methodologies exist that can support the drive towards farmer-led and science-based land consolidation. The first step involves analyzing the level of existing land-fragmentation condition in relation to an ''ideal condition' and determine as to how far the existing state of land fragmentation has deviated from the 'ideal' status (Demetriou et al., 2011). This exercise helps project planning to determine whether there is a need to prioritize land consolidation interventions and, if so, to identify areas to be targeted for the scheme. Once the need for 'consolidation' is justified on technical grounds (i.e., considering the level of fragmentation and its adverse impacts) and initial willingness of people for consolidation has been ascertained, the next step will be collecting/collating and organizing data associated with parcels, surrounding areas and their owners. In this case, earth observation systems complemented with Google Earth maps can be used to delineate parcel boundaries in order to facilitate reallocation (Fig. 4). These options integrated with ground information can be used to 'define' the attribute of each parcel such as bio-physical features (e.g., soil type and fertility status, topography) and distance to/from a range of social and technical infrastructure (including residential quarters, educational and health facilities, roads, and water bodies). These can then be linked to attributes/typologies of owners, including current preferences (overall interest and plot-specific ones) to provide proper weighing of variables. In the case of Ethiopia, the rural land registration and certification initiative that was referred to earlier in this document (also discussed in the next chapter) could provide one of the key datasets. It is essential that the 'attachment' farmers have towards their respective plots of land should be considered during 'valuation' because in some cases specific plots can carry more weight in the psychological space of farmers than mere plot fertility status.

Once these biophysical, socio-economic, and cultural attributes are collated at the appropriate scale and in an appropriate format, the next step will be to perform different alternatives of re-allocation scenarios (Figure 4). This can be achieved through 'valuation' of each plot considering different criteria that are specific to local conditions. This step is intended to provide a mechanism of 'comparing' the value of different parcels and analyze whether they are 'exchange-worthy' or whether there is a need to complement a parcel with something else to establish an acceptable degree of equivalence with the one for which it is planned to be swapped.

Once the 'value' of each parcel is determined, the next step can be to run alternative scenarios to find an optimal re-distribution plan. This step will provide the 'optimum solution' regarding reallocation. The plan then can be presented to the community and/or a specific stakeholder to set in motion the negotiation process. This is also essential as farmers' preferences can be different from the valuation results produced by the modelling 'tool'. After negotiations are done and agreements are made, reallocation can be implemented, and plot redistribution confirmed.

To handle the whole complexity of land degradation and consolidation, an automated system that can transform land consolidation planning into an efficient, systematic and transparent process is required (Demetriou et al., 2012a). Given that land consolidation involves finding an optimal rearrangement of the existing land-holding structure in a given rural area based on series of criteria and constraints (Thomas, 2006; Ayranci, 2007; Sonnenberg, 2002), geographical information systems (GIS) tools can be used to efficiently address the issue through evaluating alternative solutions and producing near-optimal land-reallocation plan. However, 'traditional' GIS tools do not have the capability to support such complex spatial planning and decision-making problems (Batty, 2008; Geertman and Stillwell, 2000; Geertman and Stillwell, 2009) because of their generic nature and inability to incorporate expert

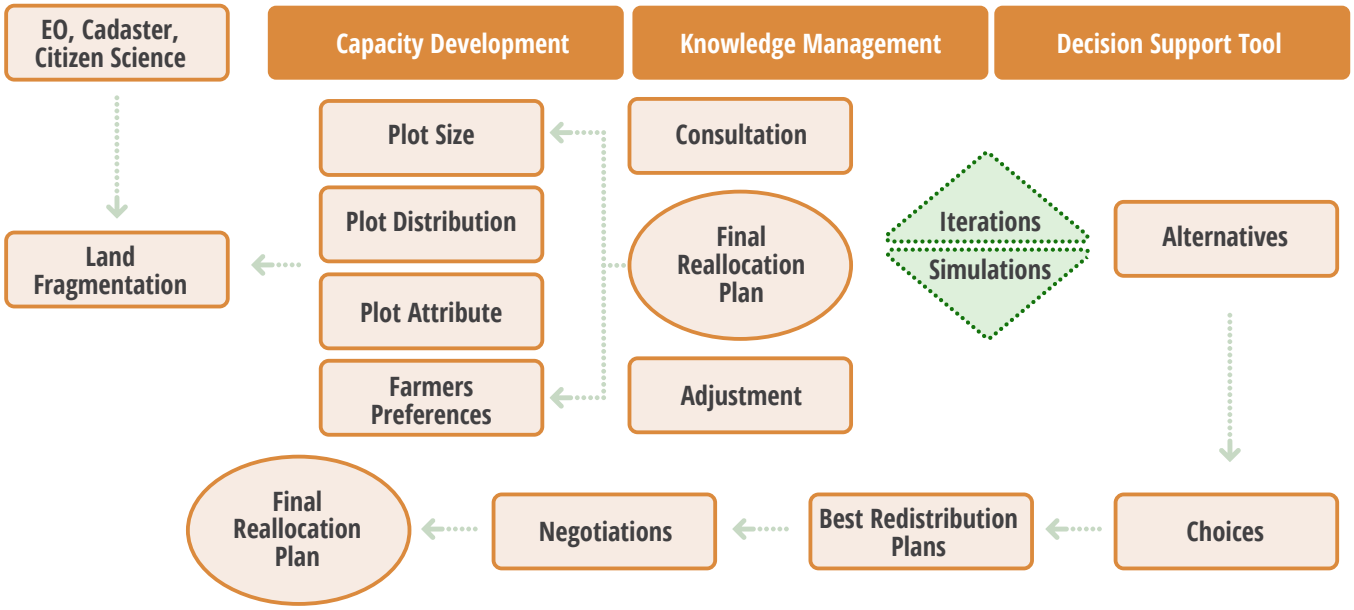


Figure 4: Conceptual framework of voluntary land consolidation processes to tackle land fragmentation problem.

knowledge without considerable programming or customization (e.g., Demetriou, 2012a, b; 2013a, b). Recently, technical advances have been made to support the efficient and effective implementation of land reallocation problem.

Considering the need for weighing and balancing a range of variables, most studies attempted to automate the process of land reallocation that would lead to land consolidation by treating it as a mathematical optimization problem (e.g. Rosman and Sonnenberg 1998; Ayranci 2007). However, most land consolidation evaluation studies have suffered from a lack of tools capable of providing detailed land reallocation inputs for ex-ante project evaluation (Demetriou et al., 2012a). In addition, most of the efforts focus on the development of isolated algorithms for land redistribution; land partitioning or the evaluation of land consolidation plans (Demetriou et al., 2011). The limitations of these studies emphasise the need for new and more efficient methods and techniques to model the entire land reallocation process within an integrated planning framework. An example of a more comprehensive and integrated decision support tool related to land consolidation that can be customized to other locations is the one developed by Demetriou et al. (2011) and subsequently improved through follow-up studies and adjustments (Demetriou et al., 2012a, b; 2013a, b). The authors have developed the LAnd CONsolidation Integrated Support System for planning and decision-making (LACONISS), which is a hybrid prototype that integrates GIS, artificial intelligence techniques, namely expert systems (ES), genetic algorithms (GAs) and multi-criteria decision methods (MCDM) both multi-attribute (MADM) and multi-objective (MODM).

As noted earlier, the decision to implement land consolidation measures usually involves undertaking a land fragmentation study, an environmental impact assessment and a feasibility study (Demetriou, 2016). The process of land reallocation also involves the assembly of all properties belonging to different landowners in a certain area, followed by a new subdivision of land into parcels and redistribution of each individual's land in the whole area (Sonnenberg, 2002). The framework by Demetriou et al. (2012a) is designed to be an integrated planning and decision support system (IPDSS) which encapsulates the entire land reallocation process into an automated workflow designed to handle different decision rules. The system framework involves four subsystems: a land-fragmentation module; a land-redistribution design module; a land-redistribution evaluation module; and a land-partitioning module organized in a Land Fragmentation System (LandFragmentS); a Land Spatial Consolidation Expert System (LandSpaCES); and a Land Parcelling System (LandParcelS) (Demetriou et al., 2011a; 2011b).

Another interesting approach (e.g., Louwsma et al., 2014) developed an allotment barometer that reflects the quality of the agricultural parcel structure for more or less homogeneous areas using spatial multi-criteria analysis. The tool was designed to provide an overview of the quality of

the agricultural structure of various plots using key parameters in order to enable 'weighting' options.

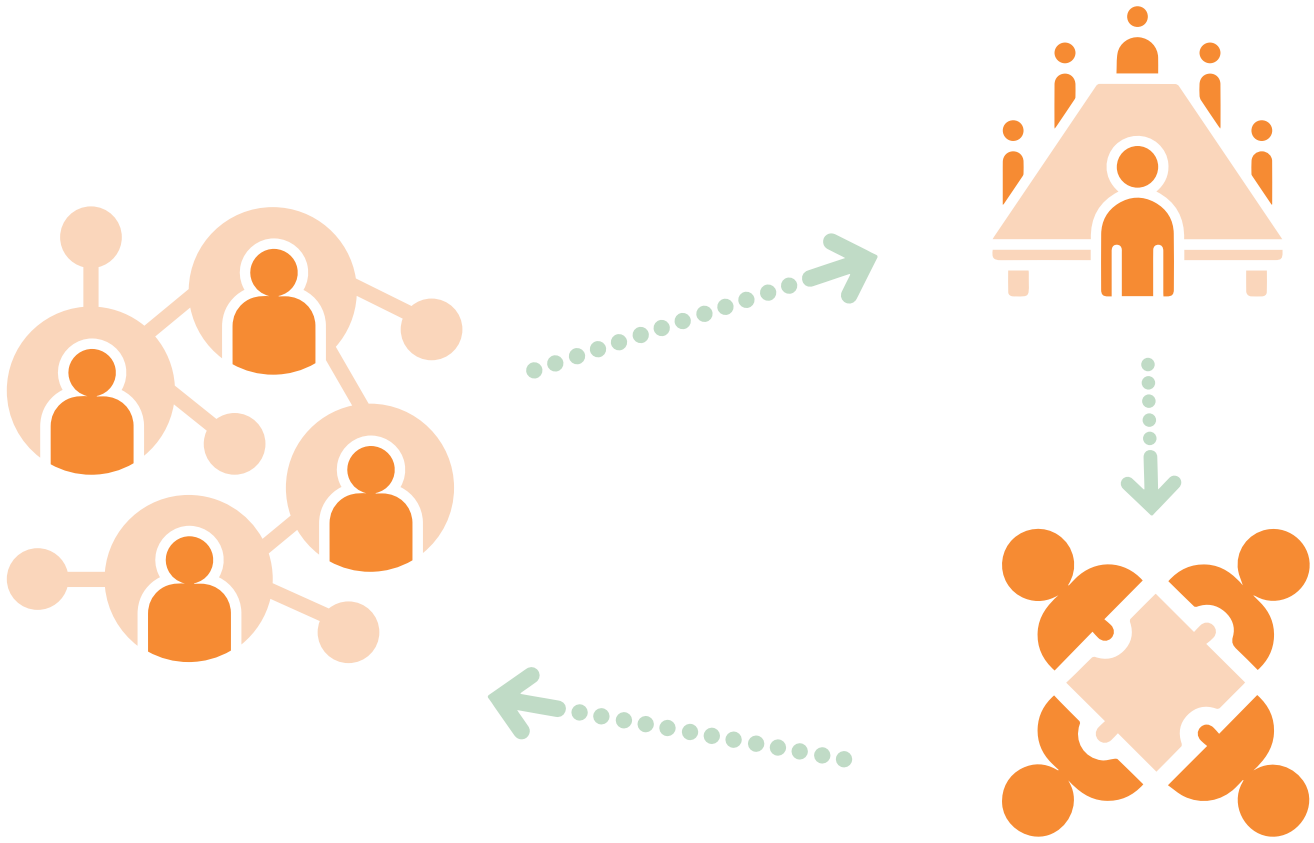
There are also recent efforts that focus on the development of the concept of "grouping" villages or parcels into larger typological units based on selected diagnostic variables to enable identification of similar areas where land consolidation can be performed (Strerk and Noga, 2019). Identifying areas which share similar spatial characteristics and consolidating them can have a positive influence, primarily on the cultural heritage, because some variables reflect both quantitative and qualitative aspects of human development on the use of land and on the built-up environment (Guanghui et al., 2015; Le´n and Mika, 2016).

Building on the above methodological perspectives and recognizing the recent developments in earth observation data acquisition system, advanced geospatial analysis approaches and increased use of mobile apps to advance utilization of 'citizen science, there is a great potential to customize operational tools to undertake integrated voluntary land consolidation in Ethiopia. Efforts such as land swap methodologies (Yimer, 2014) and mobile application tools for rural land administration (Dyli, 2016) that have been advocated for use in Ethiopia can also form important bases for operationalizing voluntary land consolidation using decision support tools. Some of the mathematical optimization models embedded with spatial allocation and planning tools can be fine-tuned and customized to fit Ethiopian condition in order to 'optimize' needs with respect to available resources/supply (plots) under different constraining criteria. All these cumulative advances can enable mapping parcels and defining their characteristics and allow re-allocation with near real-time valuations of associated benefits.

6.3. Conclusion

This chapter has demonstrated the wide variety of technical issues that need to be considered to implement land consolidation in a participatory and evidence-based manner. It is also underlined that several methodologies exist to organise land consolidation in an informed manner. This chapter also alluded to the complexity of effecting land consolidation and the need for providing sufficient time to the task at hand. This is all the more so when land consolidation becomes a national agenda to be implemented at a large geographical scale. In Ethiopia's agricultural production system, where farmers face varying degrees of challenges arising from farmland fragmentation, and where the necessary data infrastructure, skilled personnel and organisational capital are in short supply, a phased and resource-based approach to land consolidation may have to be pursued. In Ethiopia, land is a public property; hence, land consolidation will have to be government-led but – given the stakes involved – it must be nationally-owned, mustering organisational and human resources from a range of government departments and non-state research and development actors.

In the initial phase, a careful weighing of methodologies that go in consonance with the country's ability to organise the necessary resources for this endeavour need to be done. In order to hasten learning-by-doing, in the initial phase consideration could be given to piloting voluntary land consolidation in a good number of representative landscapes using basic technical parameters – without compromising the participatory character of the exercise. After a while, these experiences could be used to expand the effort more rapidly in an iterative manner. As in other facets of development programming, the underlying principle in the drive towards voluntary land consolidation has to be 'think big, act small, scale rapidly'.



7. The Broader Legal Framework in Support of Land Consolidation in Ethiopia

7.1 Introduction

The discussion on lessons of experiences from other lands is predicated on the realization that Ethiopia has of late shown, at least at the level of intent, some degree of preparedness to try out farmland consolidation. Ethiopia is a federal state, divided into nine regional states and two autonomous cities.[12] Both the federal government and its constituent regional states have promulgated laws that are meant to facilitate land consolidation and support the agricultural transformation agenda. In fact, some of the spontaneous land exchange transactions among smallholder farmers referred to earlier are believed to have been spurred by the legal provisions on land consolidation. The following section provides a brief review of pertinent laws and regulations in Ethiopia, giving particular attention to the legal provisions of six national regional states,[13] territories where more than 90% of smallholder crop agriculture in the country is practiced.

12 The formulation of a broad land policy rests with the federal government, while each of the constituent entities has a right to formulate land administration laws and regulations as it sees fit.

13 These are Afar; Amhara; Benishangul-Gumuz; Gambela; Harari; Oromia; Somali; Southern Nations, Nationalities, and Peoples; and Tigray national regional states.

7.2 Pertinent laws and regulations in support of land consolidation

For four decades now, the Ethiopian state has been playing a critical role in the allocation of rural agricultural land; thus, state tenure in land resources has been a defining feature of rural land in the country. According to Ethiopia's federal constitution ratified in 1995, the right to ownership of land and other natural resources is vested "in the State and in the peoples of Ethiopia" and land sale and other means of land exchange are prohibited (FDRE, 1995: 14, Article 40.3). The current land law characterizes the land rights of peasant farmers as a "holding right," which in turn bestows on farmers the right to *use* rural land for purposes of agriculture and natural resource development as well as to *lease* and, while the right remains in effect, *bequeath* it to a family member or other lawful heir. This right also encompasses the right to generate wealth from the land and dispose of the fruits of the land the way the landholder deems fit (FDRE, 2005: 3138, Article 2.4). Land laws that have been promulgated in the different regional states also acknowledge this overarching legal provision when elaborating the forms that land administration in their respective regions should take.

The holding rights of farmers have no time limit as such, although farmers can be evicted with adequate compensation to give way to projects of higher social purpose (FDRE, 2005: 3138–3140, Articles 7 and 9). Moreover, in part to forestall possible inter-household and/or intra-household land-related litigations, and in part to enable peasant farmers to appreciate their land-use rights and obligations under the law, the FDRE land law stipulates land measurement, registration, and issuance of holding certificates that also explicitly state the identity of the rights-holder (FDRE, 2005: 3138, Article 6). This has the added potential advantage of instilling greater confidence among peasant farmers in their holding rights and encouraging the same to undertake the necessary land conservation measures and other long-term land management options. Similar provisions in the above have also been enshrined in the land laws and regulations of virtually all of the regional states whose land laws were consulted for this study (see ANRS, 2017, Articles 34–35; BGNRS, 2010, Articles 25–27; and SNNPRS, 2007, Article 6). It should be noted, at least in passing, that the ANRS has pioneered the implementation of land registration and issuance of holding certificates through a series of pilot activities, endeavors that formed the basis for a nationwide drive toward land registration and certification.[14]

The above notwithstanding, the federal land law as well as the land laws and regulations of the different regional states identify possible instances that necessitate both inter-household and intra-household land redistribution. In both cases, the laws and regulations warn against undue parcelization of family plots and overall land fragmentation. To this end, the federal land law stipulates the need for setting a minimum size of rural landholdings (FDRE, 2005: 3141, Article 11), based on which regional states have established such sizes under varying land-use conditions (see HNRS, 2011, Article 15; ONRS, 2007, Article 7; TNRS, 2007: Article 17).

More germane to the present document is the issue of land fragmentation, to which the legislations have given due consideration. In this respect, and in direct reference to the benefits of land consolidation, the federal land law maintains that "in order to make small farm plots convenient for development, farmers are encouraged to voluntarily exchange farmlands" (FDRE, 2005: 3141, Article 11.3). Taking this as a cue, the regulation governing rural land administration in four of the six regions whose land laws have been reviewed encourages land consolidation through voluntary exchange of land among farming households (ANRS, 2017: 32, Article 20; BGNRS, 2010, Article 28; ONRS, 2007, Article 8; and SNNPRS, 2007, Article 11). In part to facilitate this undertaking, the land laws mainly of ANRS and BGNRS stipulate the provision of the requisite government technical services as well as renewal of the landholding certificates of the parties free of charge. It should be noted, however, that the said support is confined to legal assistance and related considerations, with no mention being given to the myriad issues that need to be considered with respect to the valuation of the plots to be exchanged and redress mechanisms

14 Recently, the ANRS has even gone a step further in allowing land-use rights (and by implication holding certificates) to be used as collateral for up to 30 years against loans when concluded with a legally recognized financial institution (ANRS, 2017, Article 19). This move is yet to be institutionalized at the federal level.

that need to be put in place. Given the dearth of well-trained and experienced professionals at the sub-regional level, it is also doubtful whether *woreda*-level authorities can provide the assistance expected of them. Although the proclamations envisage the competent authority to issue a directive detailing the specific nature of governmental support and incentives to be afforded to landholders' intent on instituting land consolidation, this is yet to be acted upon.

On the other hand, the land laws put the onus of initiating land consolidation on individual farmers. In other words, the laws do not consider land consolidation as an integral part of the responsibility of the competent authority that should be pursued in a proactive manner. Neither has progress with land consolidation figured in any of the annual reports of the pertinent regional bureaus and their line departments at the sub-regional level. Even at the federal level, land consolidation is not a performance metric that the mandated entity at the Ministry of Agriculture and Livestock, the Directorate of Rural Land Administration and Use (RLAUD), reports against.

All in all, the federal land law as well as the land laws at the regional level have, albeit implicitly, recognized the challenges of land fragmentation characterizing the current holdings of peasant farmers. These same laws also attempt to provide safeguards against further land fragmentation and parcelization as and when land redistribution measures are enacted. The land laws see farmer-led land consolidation as an instrument of mitigating the negative consequences of unfettered land fragmentation. However, details surrounding land consolidation in the land laws reviewed here are scanty and, at any rate, appear not to be as strongly and convincingly stated as the other substantive issues that these laws address. A useful comparator in this respect is the significant attention that the land administration regulation of ANRS gave to considerations to be taken and procedures to be followed in undertaking land registration and certification measures. Close observers of the land administration scene in Amhara Region are of the view that this is to be expected: issues of land registration and certification that found themselves in the serially revised land laws of the region are a result of years of experimentation through pilots that incorporated local views and pertinent international experiences. This should not, however, blur the naked truth: at present, at both the federal and regional levels, there are no clear, comprehensive, coherent, and consistent land legislations that are advanced in support of the promotion of farmland consolidation.[15]

The above notwithstanding, if the history of legislation surrounding land certification is anything to go by, the legal provisions for land consolidation in the ANRS can be used as entry points to launch pilot initiatives aimed at bringing about scalable processes, procedures, and implementation pathways that go in consonance with the imperatives of state tenure in land resources and regional/local realities. This could, in turn, inform refinement of the next generation of land laws in the region and possibly beyond. This approach is also in line with international experience: "[c]arrying out a pilot project is an effective way to lay the foundation for a larger, long-term land consolidation programme" (FAO, 2003: 5).

15 Recently, under the custodianship of the Ministry of Agriculture, theme-specific technical committees have been established to review the country's agricultural policies and strategies. Of this, the 'Land Technical Committee' has been entrusted with the responsibility of exploring options for land consolidation, among others. This document (as well as the different knowledge products that had been generated on this subject matter by the former CIAT and its partners) is expected to inform the deliberations of the Land Technical Committee.

Photo: CCAFS/D. Solomon

8. Concluding Remarks

Farmland fragmentation and land consolidation are issues worth exploring in the Ethiopian context. Although the country's land laws provide useful entry points to initiate workable approaches to land consolidation, no visible measure has been taken by concerned government departments at both the federal and regional levels[16] to act on such openings. Indications are that both RLAUD/MoA and regional EPLUA bureaus have had to prioritize supporting tenure-strengthening measures (such as the issuance of land certificates) over initiating land consolidation drives.

International experiences with land consolidation have shown that such an exercise is a highly knowledge-intensive undertaking that requires substantial investment in human capacity building in a range of geo-spatial and behavioral sciences. Moreover, in an ecologically and socioeconomically diverse country such as Ethiopia, land consolidation cannot be expected to be implemented in a uniform manner. Thus, a partnership, learning-by-doing approach that involves both knowledge institutions and local government administrative and technical departments appears to be a realistic option available for Ethiopia.

A clear case therefore exists for an action research agenda. Such an approach has to pursue a transdisciplinary and non-linear process that emphasizes that knowledge is located at various levels among different decision makers such as farmers, practitioners, researchers, and policymakers. Hence, the action research agenda has to be geared toward co-creating transformational knowledge by facilitating the active engagement of the different stakeholders ranging from those whose livelihood would be directly affected by the outcome of the research process to policymakers.

16 At the federal level, the concerned entity is the Directorate of Rural Land Use and Administration (RLAUD), whereas, at the regional level, it is the Environmental Protection and Land Use and Administration (EPLUA) Bureau.

In addition to the above process-oriented requirements and considerations, significant emphasis must be given to ensuring that the experimental voluntary land consolidation action research scheme aim at meeting a range of interlocking short- to medium-term as well as long-term objectives. Concurring with Seid (2018), these should include, respectively, an increment in agricultural productivity and labour efficiency as well as consolidation of land in the hands of "passionate and talented" farmers. In short, land consolidation should ultimately augment land size per farmer and facilitate the pace of agricultural transformation. This is consistent with not just the principles of land consolidation outlined earlier but also with the tenets of a *comprehensive land consolidation approach* described above.

It should be appreciated that the proposed action research program will add considerable value to and could be made to build on the gains of the myriad investments being made by the Ethiopian government and its development partners in the promotion of economically and environmentally resilient agriculture. The most directly pertinent investments for this action research are the Sustainable Land Management Programme (SLMP), the Productive Safety Net Programme (PSNP), and the Second-Level Land Certification (SLLC) scheme, all of which are overseen by the MoA system. Both SLMP and PSNP have dedicated resources to build technical and social infrastructure, investments that are otherwise needed when a comprehensive land consolidation approach is pursued. On the other hand, the SLLC scheme has readily made available geo-spatial and other tenurial information of interest for setting in motion a land consolidation drive. Thus, leveraging organizational, technical, and financial resources from the above-noted complementary investments already underway in much of the mixed farming production system of highland Ethiopia is critical if the proposed action research on voluntary land consolidation (VLC) is to have a truly transformative value.

A typical action research cycle begins with *planning* (including learning and consultations), followed by *action* (including testing of methodologies) and *fact finding* about the results of the action (including knowledge generation and management). Box 2 contains work packages that could be considered as integral to an action research agenda for guiding stepwise implementation of VLC.

An action research agenda should, at the minimum, inform and support the development of a region-specific ***voluntary land consolidation guideline*** that benefits from farmers' effective participation, expert knowledge, and engagement of political authorities and the ***refinement of the land laws of the respective regions pertaining to voluntary land consolidation.***

Box 2. Proposed Work Packages

- ***Dialogue and engagement with rural developement practitioners and policymakers.***
  - *Involve independent experts, government bodies, NGOs, and research organizations.*
  - *Create awareness and ensure buy-in.*
- ***Community-level consultations***
  - *High-intensity engagement (sensitization, consultation, and information exchange) with a range of local interest groups.*
  - *Help local people visualize how they could benefit from voluntary land consolidation (VLC).*
- ***Socioeconomic situation analysis***
  - *Perception and extent of land fragmentation and land consolidation.*
  - *Current practices of farmland valuation and modalities of land swap.*
- ***Biophysical assessment***
  - *Understand the lie of the land.*
  - *Create enviromental and household typologies.*
  - *Match options with contexts.*
- ***Build scenarios with selected farmers on VLC***
  - *Seek agreement on modalities of use of complementary investments.*
  - *Pilot VLC procedures.*
- ***Training and capacity building***
  - *Target subregional-level EPLUA experts and administrative officials.*
  - *organise in-country experience sharing tours.*

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